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A STUDY TO MONITOR AND MANAGE THE ALTERING LEVELS OF FERRITIN IN SERUM DUE TO DIABETES MELLITUS

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Abstract:
Objectives: The main purpose of this study is to measure the plasma of the blood which fights against diseases contain sufficient amount of iron containing protein in close relatives having diabetes with others. *Methodology:* An arbitrary technique was used to choose the members of each group. 35 members of each group were the subject of the study. Question answer session was carried out with each member. Concentration of iron containing protein in their plasma and amount of sugar in their blood were checked thoroughly through testing. Different types of authentic tests were used to check the both groups. *Results:* More than seventy-four percent of the participants of study were women and other remaining more than twenty-five were men in sufferers and their controls. The average ferritin value was less in the members of controls than the patients. Sugar value in the blood of controls was also less than the patients. There was not too much difference in the values between the both participants. There is an important link between sugar and ferritin value of the patients. *Conclusion:* There was not an important difference in the amount of iron containing protein. But the comparison of concentration of iron containing protein in both cases and controls has worth. Further investigation on this research was recommended which would involve a large quantity of participants.
Key Words: *Diabetes, Protein, Serum, Patients, Relatives, Ferritin.*

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INTRODUCTION:

Different organs of our body are damaged by the excessive amount iron. Heart and liver are included in those organs. Diabetes is caused by the iron storage in one of the organ of body known as pancreas. Current biological studies have proved a strong link between Diabetes and metabolism of iron. Iron containing protein plasma is affected by the above mention link. Iron storage in the different parts of the body like liver and spleen is known as ferritin concentration which is affected by many different types of diseases. Insulin hindrance is produced by iron storage. That reason can cause second type of diabetes [1].

The occurrence of glucose causes different types of action and diseases in the human body. There intolerance due to glucose in the progressing of the diabetes is normal. The bigotry of glucose is more apparent in the people of old age, people with history of disease like diabetes and fatty people. There are many reactions which affect the RNA, DNA and different types of protein but many free active agents are produced by these produced agents. The damage of tissues is accelerated in the body by these free active agents. Aging factor and some eye diseases are also the result of these kinds of free active agents. These free active agents are the cause of many other diseases [2].

The production of the free active radicals in the body is a natural process but their production more than need is the result of oxidation process. Coronary heart disease abbreviated as CHD are the result of over production of iron in the body which is an oxidation agent. The changing in the genes and good physical condition is being interpreted by the role of iron in the body. It is confirmed now that over production of the iron in the body is a prominent cause of diabetes in the human beings [3]. Different Researches have proved that high iron production in the body is measured by ferritin and it is the cause of emerging the diabetes three times. Another study confirmed that the normal people have less value of ferritin than the diabetes patients. The stirring effect of the free radicals is the cause of this problem rather than the high concentration of the iron. Ferritin and diabetes are closely attached with one another confirmed by Juka. This research proved that second type of the diabetes is a result of high concentration of iron but haemochromatosis is not the result of high iron concentration [4].

There is malfunction of metabolism system in the sufferers of diabetes; it is named as metabolic disorder. It is also one of the causes of metabolic disorder and some other diseases. The children have high tendency to acquire types two diabetes whose parents have this disease but it does not affect the tolerance of the sugar. It is confirmed that high amount of iron has a great impact on the insulin and glucose tolerance. Haemochromatosis is present 1.34% in diabetes sufferers and only point two percent in normal people. It is very important to separate the people to save their lives who are in high risk condition by discovering the ferritin amount. Diabetes second type is too much linked with the concentration of serum ferritin. The research based on the comparison of Iron storage in the participants from the relatives of diabetes patients and the participants from the healthy members with no diabetes background.

METHODOLOGY:

In this research work, thirty-five patients of diabetes were chosen from Allied Hospital Faisalabad. One of the close relative was selected to get the information from the side of each participant. One control was selected for each of the case. Two groups were made from healthy people from the diabetes family background and healthy one. They were in between twenty to fifty years of age. The participants having a major disease in them, younger than twenty years of age and greater than fifty year of age were excluded from this research work.

Both the patients and their samples were of same sex in one pair and have the same usage of iron in their body. The participants were informed about the real purpose of the research. The research was started after their consent. Question answer session was carried out with each participant and each participant has to give three to five milliliter of blood for further testing. The blood plasma was divided into different elements by using centrifugal force and those samples were stored in low temperature of negative eighteen centigrade. Pars Azmoon kit and Eliza test were used to check the fasting blood sugar and SF values. Different types of tests were used to check the validity of the data.

RESULTS:

Eight participant's information was lost in which 05 were the controls and other 03 were the patients. The calculation of Information about thirty-two patients and thirty controls was carried out. There was not any limitation in the selection of equal quantity of men and women. Women were large in quantity. More than seventy-four percent of the participants of study

were women and more than twenty-five were men in sufferers and their controls. More than thirty-two percent participants had their qualification diploma. Participants of both of the groups were from the same place of living and same types of professions. The data of the traits of the participants is given in the table 1.

Table-I: Mean and standard division of some variables in case and control group		
Variable	Case (32 n) X±SD	Control (30n) X±SD
Age (year)	30.75 ± 8.25	33.93± 9.22
Weight (Kg)	69.4 ± 11.1	66.7±11.7
Height (Cm)	161.4 ±7.2	161.8 ±6.4
Meat Consumption	2.9±1.45	2.6 ±1.2
Fish Consumption	2.34 ±1.03	2.37 ±1.06
Egg Consumption	1.6 ±1.07	1.3 ±1.5
Legume Consumption	2.6 ±0.93	2.03 ±1.24*

Table-II: Comparison of mean serum ferritin and FBS concentration between diabetic patients relatives and healthy people		
Variables	Case (32n) X±SD	Control (30n) X±SD
FBS (mg/dl)	100.6 ± 37.4	95/9 ±17
Ferritin (ng / dl)	63 ± 58.7	58.1 ±54.6

The amount of the plasma protein containing iron is measured in milligram per deciliter and given in Table-II. Fasting blood sugar value in both groups is also given in Table-II in nanogram per deciliter.

In both of values was less in control participants than the actual patients. Patients had the serum ferritin and Fasting blood sugar values respectively 63± 58.73ng/dl and 100.6± 37.38mg/dl. Controls have the values of serum ferritin and FBS respectively 58.07± 54.57ng/dl and 95.9±17.02 mg/dl). There was a relation between sugar and ferritin in only group of cases. The living condition, professions and educational abilities of all the participants were almost similar.

DISCUSSION:
The consequences of this research work proved that SF and FBS values in the control group are lesser than the cases. Serum ferritin and fasting blood sugar are related in the cases but not correlated in the controls. Iron is stored in different parts of body like spleen and liver [5]. These stores are known as Ferritin. Several diseases are the cause of its affect. Kay was the first person who gave the diabetes and ferritin association in 1993 [6]. Type two diabetes occurrences are discovered by the value of SF. High storage of iron in the body causes the hindrance to insulin which comes in result of diabetes type two [7]. There are many different ideas which describe the effect of iron containing protein on diabetes. In some diabetes cases, the damage of Pancreas has been seen. According to Tomoyuki, the state of hindrance of insulin and a moderate amount of fat in the body is described by serum ferritin. There was only one study available which was close to this research work [8]. In that study, the comparison was made between forty-one children of diabetes family and forty-nine children of healthy background [9]. The outcome of that research was same as the result of this study. There were some studies which were just the comparison between the people without disease and people having diabetes [10]. People without disease have less value of plasma of iron containing protein and chromatosis. There are many other researches present which provide different opinions about the serum ferritin and its effect on the body.

CONCLUSION:
This research proved that relatives of the diabetes patient were at risk to have high amount of serum ferritin. To check the plasma protein containing iron does not include costly testing. So; it is decided that

this testing will be carried out on large groups to save the people in danger.

REFERENCES:

1. Hashimoto, K. and M. Koga, Indicators of glycemic control in patients with gestational diabetes mellitus and pregnant women with diabetes mellitus. World journal of diabetes, 2015. 6(8): p. 1045.
2. Raghav, A. and J. Ahmad, Glycated serum albumin: a potential disease marker and an intermediate index of diabetes control. Diabetes & Metabolic Syndrome: Clinical Research & Reviews, 2014. 8(4): p. 245-251.
3. Kuragano, T., et al., Association between hemoglobin variability, serum ferritin levels, and adverse events/mortality in maintenance hemodialysis patients. Kidney international, 2014. 86(4): p. 845-854.
4. Facciorusso, A., et al., Serum ferritin as a new prognostic factor in hepatocellular carcinoma patients treated with radiofrequency ablation. Journal of gastroenterology and hepatology, 2014. 29(11): p. 1905-1910.
5. de Seigneux, S., et al., Proteinuria increases plasma phosphate by altering its tubular handling. Journal of the American Society of Nephrology, 2014: p. ASN. 2014010104.
6. Saddadi, F., et al., The effect of treatment with N-acetylcysteine on the serum levels of C-reactive protein and interleukin-6 in patients on hemodialysis. Saudi Journal of Kidney Diseases and Transplantation, 2014. 25(1): p. 66.
7. Mirza, Z., et al., Proteomics approaches to understand linkage between Alzheimer's disease and type 2 diabetes mellitus. CNS & Neurological Disorders-Drug Targets (Formerly Current Drug Targets-CNS & Neurological Disorders), 2014. 13(2): p. 213-225.
8. Das, A., et al., Mammalian target of rapamycin (mTOR) inhibition with rapamycin improves cardiac function in type 2 diabetic mice potential role of attenuated oxidative stress and altered contractile protein expression. Journal of Biological Chemistry, 2014. 289(7): p. 4145-4160.
9. Urpi-Sarda, M., et al., Metabolomics for biomarkers of type 2 diabetes mellitus: advances and nutritional intervention trends. Current Cardiovascular Risk Reports, 2015. 9(3): p. 12.
10. Timofte, D., et al., Metabolic disorders in patients operated for pancreatic cancer. The Medical-Surgical Journal, 2014. 118(2): p. 392-398.